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LPC # 1190405157 Madison County
Granite City Ditch
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RESPONSE SECTION 3

CERCLA

Pre-CERCLIS

Action Report

EPA Region 5 Records Ctr.



327881

Illinois Environmental Protection Agency
Bureau of Land
Remedial Project Management Section
Site Assessment Unit



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 Mary A. Gade, Director

September 28, 1998

Ms. Jeanne Griffin
Emergency Response Branch
Region V Offices
Office of Superfund
U.S. Environmental Protection Agency
77 West Jackson
Chicago, Illinois 60604

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SEP 29 1998
RESPONSE SECTION 3

Dear Ms. Griffin:

Please find enclosed a copy of the Pre-CERCLA Site Screening Report, and PRESCORE worksheets for the Granite City Ditch. This report is the forth of four submissions planned in the Fiscal 1998 Site Assessment cooperative agreement.

SITE NAME	COUNTY	SITE SCREENING RECOMMENDATION
Granite City Ditch	Madison	CERCLIS listing

We are pleased to provide you with the attached report. Should you have any questions or comments concerning this submission please feel free to contact me, or the authors of the specific report.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas Crause", written over a horizontal line.

Thomas Crause
Manager, CERCLA Site Assessment Programs
Division of Remediation Management
Illinois Environmental Protection Agency

**CERCLA
PRE-CERCLIS ACTION REPORT**

for:

**GRANITE CITY DITCH
GRANITE CITY, ILLINOIS**

**PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
FEDERAL SITES REMEDIATION SECTION
SITE ASSESSMENT UNIT**

SEPTEMBER 1998

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1.0 SITE BACKGROUND

1.1 Site Introduction

In June 1998, the Illinois Environmental Protection Agency's (Illinois EPA) Site Assessment Program, working in cooperation with the United States Environmental Protection Agency (U.S. EPA) initiated work on a Pre-CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Act List) Screening Action at the Granite City Ditch site in Granite City, Illinois (Figure 1). The Pre-CERCLIS Screening Action was designed to identify potential sites and determine if placement onto CERCLIS is necessary.

Past Illinois EPA investigations identified this site as a potential source of sediment contamination potentially impacting Horseshoe Lake. These investigations indicated that a storm water ditch, located on the south-east portion of town, contained elevated levels of Polycyclic Aromatic Hydrocarbon (PAH) and inorganic contamination. Further investigations revealed that portions of Horseshoe Lake also contain elevated PAH and inorganic contamination.

1.2 Site Description

The Granite City Ditch is an extensive drainage system collecting storm water from a large portion of Granite City within Madison County. The system is comprised of two separate surface water drainage ways which eventually merge together before emptying into Horseshoe Lake (Figures 2 and 3). The drainage ways collected storm water from underground sources throughout Granite City. As illustrated in Figure 3, the drainage system is over 5 miles in length and is comprised of the Nameoki Ditch and Granite City Storm Water Ditch.

Nameoki Ditch emerges just south of Pontoon Road. From this location surface water flows in a southerly direction for approximately 3 miles and travels beneath Route 162. Just south of Route 162, Nameoki Ditch joins with another storm water ditch which is described in the next paragraph. At the confluence of the two ditches, water within the ditch flows an additional 1.2 miles before emptying into Horseshoe Lake.

Portions of the Granite City Storm Water Ditch were sampled as part of previous CERCLA investigations within Granite City. Sediment analysis from the ditch revealed elevated levels of PAH's and inorganic contamination. This ditch emerges south of the junction of 23rd Street and Hall Avenue. From this location, water within the ditch flows to the east, parallel to 23rd Street. The ditch meanders south along Nameoki Avenue then passes beneath Route 162 before joining with Nameoki Ditch. The total distance from the origin of this storm water ditch to the junction with Nameoki Ditch is approximately 2.5 miles.

For purposes of this Pre-CERCLIS Screening Action Report, the combination of these two ditches will be referred to as the Granite City Ditch. The Granite City Ditch empties into Horseshoe Lake just east of the Granite City Steel Wastewater Treatment Lagoons (Figure 3). Horseshoe Lake is a 2107 acre lake designated as an Illinois State Park, designated a fishery, and used for recreational purposes.

1.3 Site History

It is unclear when the Granite City Ditch system was completed but file information indicates that portions have been used since at least the 1960's. The visible portions of the ditch serve as collection points for storm water drainage pipes from a large portion of Granite City.

According to information from the Granite City Street Department, the ditch collects storm water drainage from most of the south, south-east, and eastern portions of Granite City. These areas of town are comprised of residential and light industrial areas. The storm water within the ditch does not receive treatment prior to entering Horseshoe Lake.

Information from the Illinois State Water Survey indicates that prior to the 1960's, the Granite City Ditch received waste water from the Granite City Steel facility. Granite City Steel has operated at the Granite City location since 1878 and it is unknown how long waste water may have been discharged through the ditch. In the mid 1960's Granite City Steel constructed their own waste water treatment facility which bypassed the Granite City Ditch. Storm water from the Granite City Steel facility is also collected and treated within their own treatment facility. This water is treated then reused in the steel making process or discharged into Horseshoe Lake through a permitted discharge point.

2.0 FIELD INVESTIGATION ACTIVITIES AND ANALYTICAL RESULTS

2.1 Reconnaissance Activities and Analytical Results

On May 20, 1998, Illinois EPA's Site Assessment Unit conducted a reconnaissance visit of the Granite City area. During the visit, information from the Granite City Street Department was gathered in order to determine the path and destination of the Granite City Ditch. The street department mentioned that storm water carried within this ditch is gathered from a large portion of Granite City. The city provided Illinois EPA with a copy of map depicting storm water drainage near 23rd Street and Nameoki Avenue. During the same visit, potential locations along the ditch were identified in order to collect sample screening data. Additional locations were

tentatively identified within Horseshoe Lake.

On June 2, 1998, Illinois EPA personnel collected sediment data from the Granite City Ditch and Horseshoe Lake. Fifteen sediment locations were screened using a Niton 700-Series X-Ray Fluorescence (XRF) and Polycyclic Aromatic Hydrocarbon (PAH) immunoassay test kits. Screening analysis of the sediment samples can be found in Table 1. Following sample screening, each location was mapped using a Trimble Incorporated, Global Positioning Unit. Locations of each sample can be found in Figure 3.

Samples 1 through 7 were collected from various locations from Horseshoe Lake near the confluence with Granite City Ditch. Inorganic screening analysis with the XRF indicated the sediments from these locations contained the highest levels of zinc. Three locations indicated total PAH concentrations less than 1 ppm while four locations were detected between 1 ppm and 10 ppm.

Samples 9 and 10 were collected from the Nameoki Ditch portion of the drainage system. These samples were collected north of Route 162 and did not indicate severe levels of inorganic contamination. Both samples indicated total PAH contamination between 1 ppm and 10 ppm.

Samples 14 and 15 taken from the sediments of the Granite City Storm Water Ditch. One location was chosen along 23rd Street and another along Nameoki Avenue. Both samples indicated the highest screening levels of iron and lead. Concentrations of 10 ppm were exceeded by PAH immunoassay screening on both sample locations.

Samples 8, 12, and 13 were collected downstream from where the two portions of the Granite City Ditch (Granite City Storm Water Ditch and Nameoki Ditch) combined. Screening analysis of samples 8 and 12 using the XRF did not indicate any significant levels of inorganic

contamination. Sample 13 revealed elevated levels of iron. Immunoassay screening indicated samples 8 and 12 contained PAH concentrations between 1 ppm and 10 ppm. Levels exceeding 10 ppm were found within Sample 13.

3.0 SITE RECOMMENDATION FOR FUTURE CERCLA ACTIVITIES AND/OR LISTING AND/OR CERCLIS

Screening data collected during Pre-CERCLIS Screening activities indicated elevated levels of total PAH's at several locations along the Granite City Ditch. Varying levels of inorganic contamination also exist with the ditch, however, these concentrations appeared to be below Superfund Chemical Data Matrix and other environmental benchmarks. The collection of sediment samples revealed that the portion of the ditch referred to as the Granite City Storm Water Ditch contained the highest total PAH contamination. Two samples collected from that ditch indicated levels above 10 ppm and the nearest downstream sample also indicated levels exceeding 10 ppm. Several other samples collected from the ditch indicated levels of total PAH's varying between 1 ppm and 10 ppm.

The sediment samples collected during this investigation documented the presence of contaminants within the sediments of Granite City Ditch. A direct pathway exists along the ditch for the migration of contaminated sediments to enter Horseshoe Lake. Further information will be needed in order to fully characterize the source of contamination within the Granite City Ditch. It is recommended that the Granite City Ditch site be added to CERCLIS for further investigation.

GRANITE CITY STEEL
ILD# 980606917
FIGURE 6
SEDIMENT SAMPLES

SAMPLING POINT DATE	X201 4-18-95 farthest upstream	X202 4-18-95	X203 4-18-95 duplicate sample of X202	X204 4-18-95	
PARAMETER					
VOLATILES					
Methylene Chloride	11.0 BJ	11.0 BJ	12.0 BJ	13.0 BJ	
Acetone	76.0	140.0	180.0	---	
Carbon Disulfide	6.0 J	---	---	---	
2-Butanone (MEK)	28.0	35.0	41.0	---	
	(ppb)	(ppb)	(ppb)	(ppb)	
SEMIVOLATILES					
Naphthalene	---	3600.0 J	3400.0 J	3100.0	
2-Methylnaphthalene	---	840.0 J	870.0 J	1000.0	
Acenaphthylene	---	1300.0 J	1300.0	1500.0	
Acenaphthene	---	---	---	230.0	J
Dibenzofuran	---	1200.0 J	1200.0 J	1500.0	
Fluorene	---	1100.0 J	1100.0 J	1100.0	
Phenanthrene	5300.0	6300.0	5700.0	4900.0	
Anthracene	---	1700.0 J	1700.0 J	2100.0	
Carbazole	---	---	---	1200.0	
Di-n-Butylphthalate	2000.0 BJ	1500.0 BJ	1300.0 BJ	550.0 BJ	
Fluoranthene	17000.0	14000.0	11000.0	5200.0	
Pyrene	8500.0	8700.0	6500.0	3500.0	
Benzo(a)anthracene	6100.0	7300.0	5300.0	3700.0	
Chrysene	11000.0	11000.0	7800.0	4600.0	
bis(2-Ethylhexyl)phthalate	8500.0	6300.0	3900.0 J	---	
Benzo(b)fluoranthene	8000.0	7000.0	5800.0	3600.0	
Benzo(k)fluoranthene	5000.0	6000.0	5600.0	4000.0	
Benzo(a)pyrene	3500.0 J	4900.0	4600.0	3300.0	
Indeno(1,2,3-cd)pyrene	---	2200.0 J	2000.0 J	2800.0	
Benzo(g,h,i)perylene	---	---	---	2800.0	
	(ppb)	(ppb)	(ppb)	(ppb)	
PESTICIDES					
alpha-BHC	---	---	---	9.6	P
gamma-BHC (Lindane)	---	---	3.4 JP	5.1	P
Heptachlor	---	4.6 P	3.2 JP	2.6	JP
Aldrin	---	---	---	13.0	
Heptachlor epoxide	5.9 P	---	---	18.0	P
Dieldrin	41.0 P	51.0 P	57.0 P	37.0	P
4,4'-DDE	29.0 P	---	---	---	
Endrin	44.0 BP	89.0 BP	110.0 B	160.0	B
4,4'-DDD	44.0 P	50.0 P	64.0	87.0	
Endosulfan sulfate	6.7 JP	---	4.3 JP	---	
4,4'-DDT	24.0 P	25.0 P	18.0 P	21.0	P
Methoxychlor (Marlate)	46.0 P	---	---	---	
alpha-Chlorodane	120.0	110.0	130.0	110.0	
gamma-Chlorodane	110.0	110.0	120.0	110.0	P
Aroclor-1260	500.0	530.0	510.0	440.0	
	(ppb)	(ppb)	(ppb)	(ppb)	
INORGANICS					
Aluminum	14500.0	11700.0	11300.0	8230.0	
Arsenic	6.3 J	7.8 J	7.7 J	8.4	J
Barium	230.0	187.0	184.0	168.0	
Beryllium	2.0 B	1.4 B	1.5 B	1.2	B
Cadmium	6.4	4.6	4.2	3.8	
Calcium	73800.0	32300.0	34500.0	16400.0	
Chromium	134.0	100.0	105.0	116.0	
Cobalt	6.1 B	8.6 B	5.6 B	8.4	B
Copper	105.0	73.6	78.5	88.3	
Iron	51300.0	26500.0	28300.0	28700.0	
Lead	421.0	319.0	333.0	344.0	
Magnesium	12100.0	7190.0	7450.0	5220.0	
Manganese	1540.0	904.0	937.0	1080.0	
Mercury	0.38 J	0.45 J	0.41 J	0.31	J
Nickel	---	---	32.0	33.9	
Potassium	2260.0 B	1950.0	1630.0 B	1220.0	B
Selenium	1.2 J	0.87 J	0.87 J	0.83	J
Sodium	884.0 B	290.0 B	298.0 B	327.0	B
Thallium	---	---	---	0.70	B
Vanadium	117.0	76.5	75.2	75.8	
Zinc	1010.0	777.0	806.0	804.0	
Cyanide	---	2.4	---	2.1	
	(ppm)	(ppm)	(ppm)	(ppm)	

FIGURES AND TABLES

Figure 1
Site Location Map

Granite City Ditch
Madison County, Illinois



Figure 2
Site Area Map

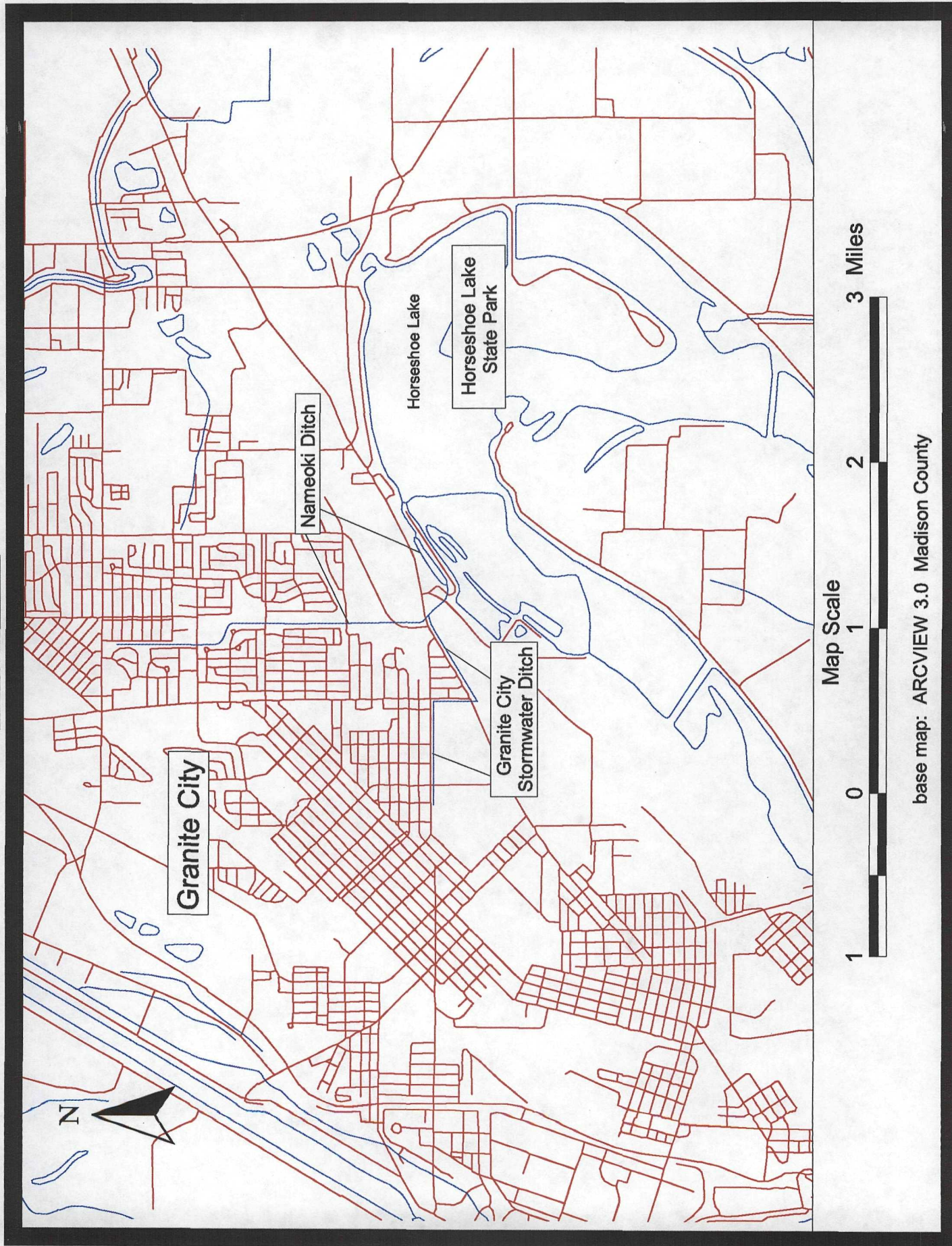


Figure 3
Sample Location Map

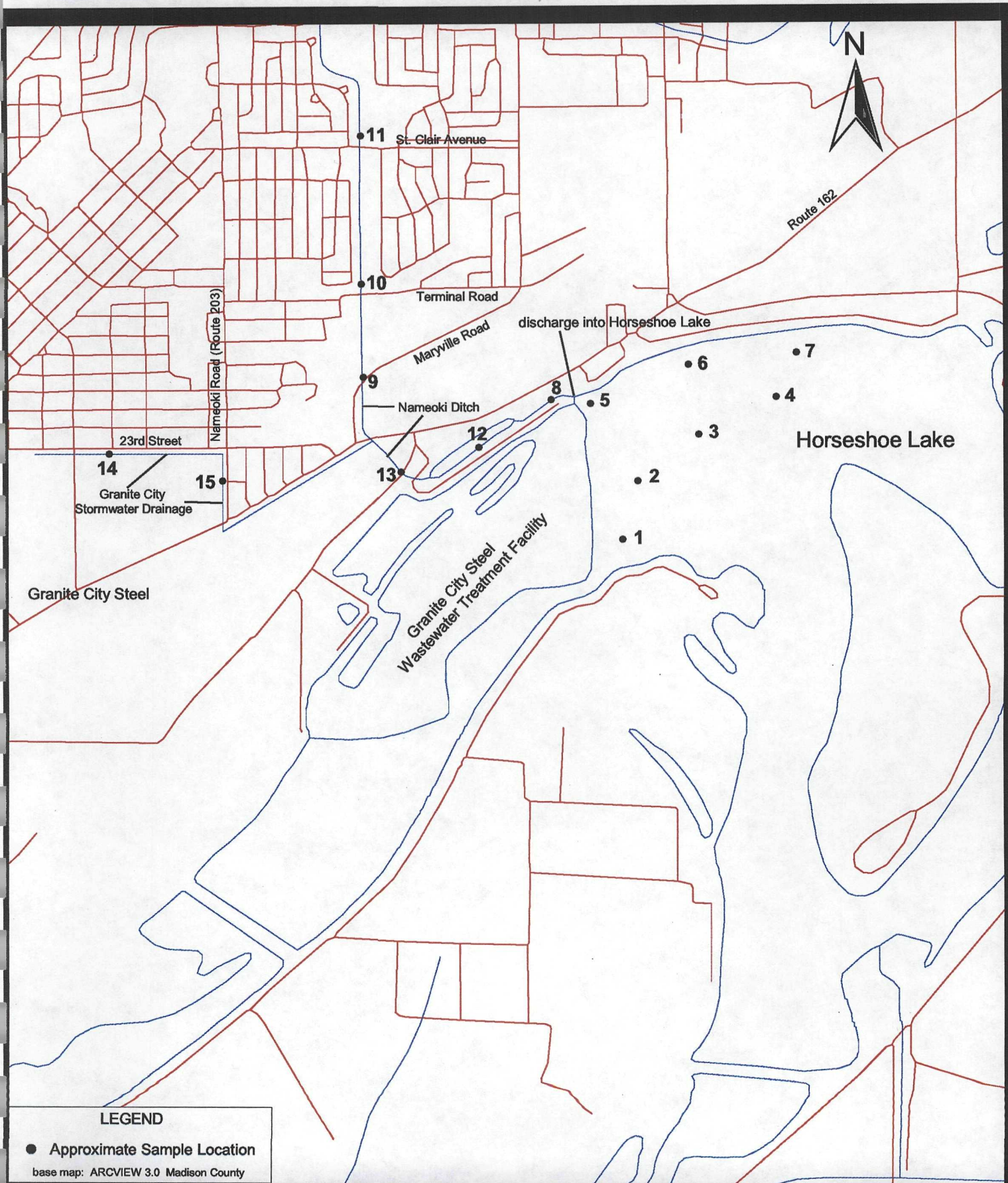


Table 1
Sediment Sample Summary
Granite City Ditch

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<u>XRF concentrations</u> (ppm) *															
Lead	<92	165	<79	122	<98	131	125	<100	143	111	173	118	124	240	202
Zinc	950	1338	<147	182	<178	799	705	-----	<187	-----	250	<185	<200	337	272
Copper	-----	-----	<304	<303	<361	<409	-----	<383	<386	<420	-----	<388	<412	-----	<351
Nickel	<380	<354	-----	-----	-----	<373	<364	-----	-----	<426	<387	-----	-----	<439	<345
Cobalt	<613	<566	<563	<526	565	<604	<635	<616	<593	<652	<600	<583	<770	<775	<569
Iron	10.6 K	9440	10.9 K	11.2 K	6643	10.0 K	13.9 K	9094	7027	8416	7449	6931	14.7 K	14.7 K	10.1 K
Manganese	<4584	<4168	<4147	<4089	<4274	<4636	<4898	-----	<4620	<4948	<4594	<4322	<5923	<5846	<4519
Chromium	<1730	<1591	-----	-----	-----	-----	-----	<1761	-----	<1906	<1810	-----	<2177	<2142	-----
Mercury	-----	-----	-----	-----	<88	-----	-----	<91	-----	-----	-----	-----	-----	-----	-----
<u>PAH Immunoassay</u> (ppm) **	<1	>1 - <10	<1	<1	>1 - <10	>1 - <10	>1 - <10	<1	>1 - <10	>1 - <10	>1 - <10	>1 - <10	>10	>10	>10

* All sediment samples were analyzed with the Niton 700 Series X-Ray Fluorescence Spectrum analyzer
Concentrations were collected using a 60 second exposure

----- indicates Non-detected

** Immunoassay test levels were 1ppm and 10 ppm
< 1 - less than 1 ppm
> 1 - < 10 - greater than 1 ppm but less than 10 ppm
> 10 - greater than 10 ppm